TROUBLESHOOTING

TROUBLESHOOTING HINTS

1. Engine troubles are usually not caused by the EFI system.
   When troubleshooting, always first check the condition of the other systems.
   (a) Electronic source
   - Battery
   - Fusible links
   - Fuses

   (b) Body ground
   (e) Fuel supply
   - Fuel leakage
   - Fuel filter
   - Fuel pump

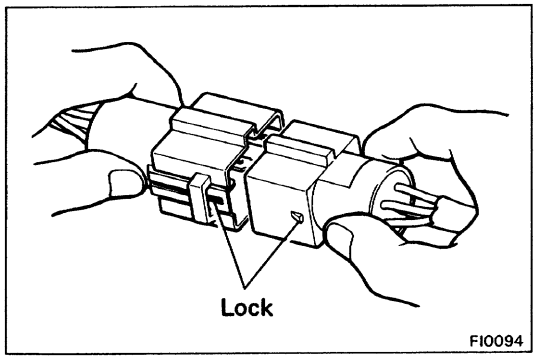
   (d) Ignition system
   - Spark plugs
   - High–tension cords
   - Distributor
   - Ignition coil
   - Igniter

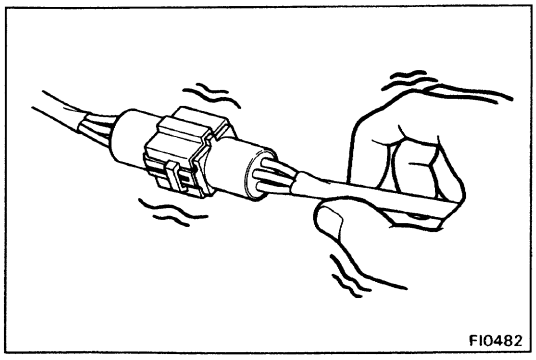
   (e) Air induction system
   - Vacuum leaks

   (f) Emission control system
   - PCV system
   - EGR system

   (g) Others
   - Ignition timing (ESA system)
   - Idle speed (ISC system)
   - etc.

2. The most frequent cause of problems is simply a bad contact in wiring connectors. Always check that connections are secure.
   When inspecting the connector, pay particular attention to the following points:
   (a) Check to see that the terminals are not bent.
   (b) Check to see that the connector is pushed in completely and locked.
   (c) Check to see that there is no signal change when the connector is slightly tapped or wiggled.
3. Troubleshoot sufficiently for other causes before replacing the ECU, as the ECU is of high quality and it is expensive.





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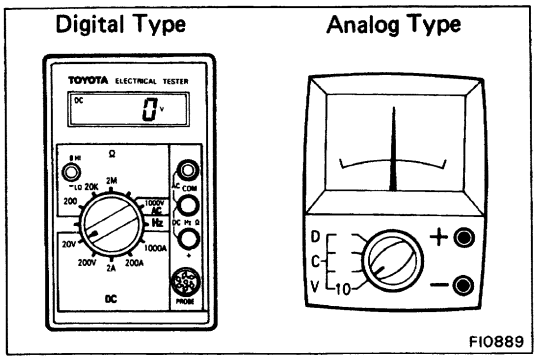

4. Use a volt/ohmmeter with high impedance (10 kΩ/V minimum) for troubleshooting of the electrical circuit.
(See page FI–29)

TROUBLESHOOTING PROCEDURES
SYMPTOM – DIFFICULT TO START OR NO START (ENGINE WILL NOT CRANK OR CRANKS SLOWLY)

CHECK ELECTRIC SOURCE	BAD	1. Battery (1) Connection (2) Gravity – Drive belt – Charging system (3) Voltage 2. Fusible links
OK ↓		
CHECK STARTING SYSTEM	BAD	1. Ignition switch 2. Starter relay (USA only) 3. Starter 4. Neutral start switch 5. Wiring/Connection

SYMPTOM – DIFFICULT TO START OR NO START (CRANKS OK)

CHECK DIAGNOSIS SYSTEM Check for output of diagnostic code. (See page FI–22)	Malfunction code(s)	Diagnostic code(s) (See page FI–26)
Normal code ↓		
DOES ENGINE START WITH ACCELERATOR PEDAL DEPRESSED?	YES	ISC system (1) ISC valve (2) Wiring connection
NO ↓		
CHECK FOR VACUUM LEAKS IN AIR INTAKE LINE	BAD	1. Oil filler cap 2. Oil dipstick 3. Hose connections 4. PCV hoses 5. EGR system – EGR valve stays open
OK ↓		
CHECK IGNITION SPARK (See page IG–5)	BAD	1. High–tension cords 2. Distributor 3. Ignition coil 4. Igniter

OK ↓ CONTINUED ON PAGE FI–11

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↓ OK CONTINUED FROM PAGE FI–10

CHECK SPARK PLUGS
Plug gap: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.

NO →
1. Spark plugs
2. Compression pressure
   Minimum: 9.0 kg/cm2 (128 psi, 883 kPa) at 250 rpm
3. Valve clearance
   Standard: IN 0.15 – 0.25 mm (0.006 – 0.010 in.)
   EX 0.20 – 0.30 mm (0.008 – 0.012 in.)

BAD (All Plugs WET) →
1. Injector(s) – Shorted or leaking
2. Injector wiring – Short circuited
3. Cold start injector – Leakage (See page FI–54)
4. Cold start injector time switch (See page FI–78)

OK ↓

CHECK FUEL SUPPLY TO INJECTOR
1. Fuel in tank
2. Fuel pressure in fuel line
   (1) Connect terminals + B and FP of the check connector.
   (2) Fuel pressure at fuel return hose can be felt. (See page FI–49)

BAD →
1. Fuel line – Leakage – Deformation
2. Fuse
3. Fuel pump (See page FI–48)
4. Fuel filter
5. Fuel pressure regulator (See page FI–57)

OK ↓

CHECK FUEL PUMP SWITCH IN AIR FLOW METER
Check continuity between terminals FC and E1 while measuring plate of air flow meter is open.

BAD → Air flow meter (See page FI–66)

OK ↓

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector.
2. Check ignition timing.
Standard: 10° BTDC @ idle
(w/ Terminals TE1 and E1 connected)

NO → Ignition timing – Adjust (See page IG–12)

OK ↓

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page **FI–29**)

BAD →
1. Wiring connection
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay (See page FI–76)
3. Air flow meter (See page FI–66)
4. Water temp. sensor (See page FI–79)
5. Air temp. sensor (See page FI–66)
6. Injection signal circuit
   (1) Injector wiring
   (2) ECU (See page FI–85)

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SYMPTOM – ENGINE OFTEN STALLS

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI–22)

→ Malfunction code(s) → Diagnostic code(s) (See page FI–26)

↓ Normal code

CHECK FOR VACUUM LEAKS IN AIR INTAKE LINE

→ BAD →
1. Oil filler cap
2. Oil dipstick
3. Hose connections
4. PCV hoses
5. EGR system – EGR valve stays open

↓ OK

CHECK FUEL SUPPLY TO INJECTOR
1. Fuel in tank
2. Fuel pressure in fuel line
   (1) Connect terminals + Band FP of the check connector.
   (2) Fuel pressure at fuel return hose can be felt. (See page FI–49)

→ BAD →
1. Fuel line – Leakage – Deformation
2. Fuses
3. Fuel pump (See page FI–48)
4. Fuel filter
5. Fuel pressure regulator (See page FI–57)

↓ OK

CHECK AIR FILTER ELEMENT

→ BAD → Element – Clean or replace

↓ OK

CHECK IDLE SPEED
Standard: 700 rpm

→ BAD →
ISC system
   (1) Wiring connections
   (2) ISC valve (See page FI–73)
   (3) ECU (Test by substitution)

↓ OK

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the service connector.
2. Check ignition timing.
   Standard: 10° BTDC @ idle (w/ Terminals TE1 and EI connected)

→ NO → Ignition timing – Adjust (See page IG–12)

↓ OK

CHECK SPARK PLUGS
Plug gap: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.

→ NO →
1. Spark plugs
2. Compression pressure
   Minimum: 9.0 kg/cm^2 (128 psi, 883 kPa) at 250 rpm
3. Valve clearance (Cold)
   Standard: IN 0.15 – 0.25 mm (0.006 – 0.010 in.)
   EX 0.20 – 0.30 mm (0.008 – 0.012 in.)

↓ OK

CONTINUED ON PAGE FI–13

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OK CONTINUED FROM PAGE FI–12

CHECK COLD START INJECTOR
(See page FI–54)
BAD → 1. Cold start injector (See page FI–54)
2. Cold start injector time switch (See page FI–78)

OK

RECHECK FUEL PRESSURE
(See page FI–49)
BAD → 1. Fuel pump (See page FI–48)
2. Fuel filter
3. Fuel pressure regulator (See page FI–57)

OK

CHECK INJECTORS
(See page FI–59)
BAD → Injection condition

OK

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page FI–29)
BAD →
1. Wiring connections
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay (See page FI–76)
3. Air flow meter (See page FI–66)
4. Water temp. sensor (See page FI–79)
5. Air temp. sensor (See page FI–66)
6. Injection signal circuit
   (1) Injector wiring
   (2) ECU (See page FI–85)

SYMPTOM ENGINE SOMETIMES STALLS

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI–22)
Malfunction code(s) → Diagnostic code(s) (See page FI–26)

Normal code

CHECK AIR FLOW METER
(See page FI–66)
BAD → Air flow meter

OK

CHECK WIRING CONNECTORS AND RELAYS
Check for signal change when the connector or relay is slightly tapped or wiggled.
BAD →
1. Connectors
2. EFI main relay (See page FI–76)
3. Circuit opening relay (See page FI–77)

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SYMPTOM – ROUGH IDLING AND/OR MISSING

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI–22)

Malfunction code(s) → Diagnostic code(s) (See page FI–26)

Normal code ↓

CHECK FOR VACUUM LEAKS IN AIR INTAKE LINE

BAD →
1. Oil filler cap
2. Oil dipstick
3. Hose connections
4. PCV hoses
5. EGR system – EGR valve stays open

OK ↓

CHECK AIR FILTER ELEMENT

BAD → Element – Clean or replace

OK ↓

CHECK IDLE SPEED
STD: 700 rpm

NO →
ISC system
(1) Wiring connections
(2) ISC valve (See page FI–73)
(3) ECU

OK ↓

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector.
2. Check ignition timing.
Standard: 10° BTDC @ idle (w/ Terminals TE1 and E1 connected)

NO → Ignition timing – Adjust (See page IG–12)

OK ↓

CHECK SPARK PLUGS
Plug gap: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.

NO →
1 . Spark plugs and high–tension cords
2. Compression pressure
Minimum: 9.0 kg/cm^2 (128 psi, 883 kPa) at 250 rpm
3. Valve clearance (Cold)
Standard: IN 0.15 – 0.25 mm (0.006 – 0.010 in.)
EX 0.20 – 0.30 mm (0.008 – 0.012 in.)

OK ↓

CHECK COLD START INJECTOR
(See page FI–54)

BAD →
1. Cold start injector (See page FI–54)
2. Cold start injector time switch. (See page FI–78)

OK ↓

CONTINUED ON PAGE FI–15

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OK CONTINUED FROM PAGE FI–14

CHECK FUEL PRESSURE
(See page FI–49)

BAD →
1. Fuel pump (See page FI–48)
2. Fuel filter
3. Fuel pressure regulator (See page FI–57)

OK

CHECK INJECTORS
(See page FI–59)

BAD →
Injection condition

OK

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page **FI–29**)

BAD →
1. Wiring connections
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay (See page FI–76)
3. Air flow meter (See page FI–66)
4. Water temp. sensor (See page FI–79)
5. Air temp. sensor (See page FI–66)
6. Injection signal circuit
   (1) Injector wiring
   (2) ECU (See page FI–85)
7. Oxygen sensor(s) (See pages FI–82, 84)

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SYMPTOM – HIGH ENGINE IDLE SPEED (NO DROP)

CHECK ACCELERATOR LINKAGE
→ BAD → Linkage – Stuck
↓ OK

CHECK DIAGNOSIS SYSTEM
Check for– output of diagnostic code.
(See page R–22)
→ Malfunction code(s) → Diagnostic code(s) (See page FI–26)
↓ Normal code

CHECK ISC SYSTEM
→ BAD →
1. Wiring connections
2. ISC valve (See page FI–72)
3. Air conditioner switch

↓ OK

CHECK THROTTLE POSITION SENSOR (See page **FI–68**)
→ BAD → Throttle body
↓ OK

CHECK FUEL PRESSURE
(See page FI–49)
→ BAD → Fuel pressure regulator – High pressure
↓ OK

CHECK COLD START INJECTOR
(See page FI–54)
→ BAD → Cold start injector – Linkage
↓ OK

CHECK INJECTORS (See page **FI–59**)
→ BAD → Injectors – Leakage, Injection quantity
↓ OK

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page **FI–29**)
→ BAD →
1. Wiring connection
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay (See page FI–76)
3. Air flow meter (See page FI–66)
4. Water temp. sensor (See page FI–79)
5. Air temp. sensor (See page FI–66)
6. Injector signal circuit
   (1) Injector wiring
   (2) ECU (See page FI–85)

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SYMPTOM – ENGINE BACKFIRES–Lean Fuel Mixture–Misfire

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI–22)

Malfunction code(s) → Diagnostic code(s) (See page FI–26)

Normal code ↓

CHECK FOR VACUUM LEAKS IN AIR INTAKE LINE

BAD →
1. Oil filler cap
2. Oil dipstick
3. Hose connections
4. PCV hose(s)
5. EGR system – EGR valve stays open

OK ↓

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector.
2. Check ignition timing.
Standard: 10° BTDC @ idle (w/ Terminals TE1 and E1 connected)

NO → Ignition timing – Adjust (See page IG–12)

OK ↓

CHECK COLD START INJECTOR
(See page FI–54)

BAD →
1. Cold start injector (See page FI–54)
2. Cold start injector time switch (See page FI–78)

OK ↓

CHECK FUEL PRESSURE
(See page FI–49)

BAD →
1. Fuel pump (See page FI–48)
2. Fuel filter
3. Fuel pressure regulator (See page FI–57)

OK ↓

CHECK INJECTORS
(See page FI–59)

BAD → Injectors – Clogged

OK ↓

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page **FI–29**)

BAD →
1. Wiring connection
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay (See page FI–76)
3. Air flow meter (See page FI–66)
4. Water temp. sensor (See page FI–79)
5. Air temp. sensor (See page FI–66)
6. Throttle position sensor (See page FI–68)
7. Injection signal circuit
   (1) Injector wiring
   (2) Fuel cut RPM (See page FI–88)
   (3) ECU (See page FI–85)
8. Oxygen sensor(s) (See pages FI–82, 84)

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SYMPTOM – MUFFLER EXPLOSION (AFTER FIRE)–Rich Fuel Mixture–Misfire

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI–22)

→ Malfunction code(s) → Diagnostic code(s) (See page FI–26)

↓ Normal code

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector.
2. Check ignition timing.
Standard: 10° BTDC @ idle (w/ Terminals TE1 and E1 connected)

→ NO → Ignition timing – Adjust (See page IG–12)

↓ OK

CHECK COLD START INJECTOR
(See page FI–54)

→ BAD →
1. Cold start injector (See page FI–54)
2. Cold start injector time switch (See page FI–78)

↓ OK

CHECK FUEL PRESSURE
(See page FI–49)

→ BAD → Fuel pressure regulator (See page FI–57)

↓ OK

CHECK INJECTORS (See page FI–59)

→ BAD → Injectors – Leakage

↓ OK

CHECK SPARK PLUGS
Plug gap: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.

→ NO →
1. Spark plugs
2. Compression pressure
Minimum: 9.0 kg /cm2 (128 psi, 883 kPa) at 250 rpm
3. Valve clearance (cold)
Standard: IN 0.15 – 0.25 mm (0.006 – 0.010 in.)
EX 0.20 – 0.30 mm (0.008 – 0.012 in.)

↓ OK

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page FI–29)

→ BAD →
1. Throttle position sensor
2. Injection signal circuit
(1) Injector wiring
(2) Fuel cut RPM (See page FI–88)
(3) ECU (See page FI–85)
3. Oxygen sensor(s) (See pages FI–82, 84)

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SYMPTOM – ENGINE HESITATES AND/OR POOR ACCELERATION

CHECK BRAKES → BAD → Brakes – Drag

OK ↓

CHECK FOR VACUUM LEAKS 1N AIR INTAKE LINE → BAD →
1. Oil filler cap
2. Oil dipstick
3. Hose connections
4. PCV hose(s)
5. EGR system – EGR valve stays open

OK ↓

CHECK AIR FILTER ELEMENT → BAD → Element – Clean or replace

OK ↓

CHECK DIAGNOSIS SYSTEM
Check for output of diagnostic code.
(See page FI–22) → Malfunction code(s) → Diagnostic code(s) (See page FI–26)

Normal code ↓

CHECK IGNITION SPARK
(See page IG–5) → BAD →
1. High–tension cords
2. Distributor
3. Ignition coil
4. Igniter

OK ↓

CHECK IGNITION TIMING
1. Connect terminals TE1 and E1 of the check connector.
2. Check ignition timing
Standard: 10° BTDC @ idle (w/ Terminals TE1 and E1 connected)

→ NO → Ignition timing – Adjust (See page IG–12)

OK ↓

CHECK FUEL PRESSURE
(See page FI–49) → BAD →
1. Fuel pump (See page FI–48)
2. Fuel filter
3. Fuel pressure regulator (See page FI–57)

OK ↓

CHECK INJECTORS
(See page FI–59) → BAD → Injection condition

OK CONTINUED ON PAGE FI–20

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OK

CONTINUED FROM PAGE FI–19

CHECK SPARK PLUGS
Plug gap: 1.1 mm (0.043 in.)
HINT: Check compression pressure and valve clearance if necessary.

NO

1. Spark plugs
2. Compression pressure
   Minimum: 9.0 kg /cm2
   0 28 psi, 883 kPa f
   at 250 rpm
3. Valve clearance (Cold)
   Standard: IN 0.15 – 0.25 mm (0.006 – 0.010 in.)
   EX 0.20 – 0.30 mm (0.008 – 0.012 in.)

OK

CHECK EFI ELECTRONIC CIRCUIT USING VOLT/OHMMETER
(See page **FI–29**)

BAD

1. Wiring connections
2. Power to ECU
   (1) Fusible links
   (2) Fuses
   (3) EFI main relay (See page FI–76)
3. Air flow meter (See page FI–66)
4. Water temp. sensor (See page FI–79)
5. Air temp. sensor (See page FI–66)
6. Throttle position sensor (See page FI–68)
7. Injection signal circuit
   (1) Injector wiring
   (2) ECU (See page FI–85)

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